Course Policy:

Department	Information Technology
Faculty	Computer Science
Course Code	BIT-471
Course Title	Linux Administration
Credit hour	3
Pre-Requisite	Data Comm and Computer Networking
Course Instructor	Baitullah Malakhil
Text Book	Red Hat System Administration I, II & III
Reference Book	Red Hat System Administration I, II & III

1. Course Description:

This course will equip the students with the RHEL7 administrative skill. The course has three main phases which start with the basics of the course then to the medium level and finally the advance RHEL7 administrative tasks. The course is about 90% practical.

2. Course Learning Objectives (CLO):

1. Understanding the philosophy of open source and introduction to RHEL7 OS
2. Basic Linux commands using Bash shell of RHEL7
3. Working with files/ directories and users/groups account management
4. Working with RHEL7 firewall and setting up network connections
5. Setting up yum server
6. Installation and configuration of Samba server, vsFTP server, DHCP, DNS Server
7. Working with NTP and apache web server

3. Learning Domain:

- Cognitive (knowledge)
- Affective (Attitude)
- Psychomotor (Physical or Manual skills)

Only cognitive domain is used for this course while the rest two cannot applied here

Course Policy:

4. Course Learning Objectives Mapping with Bloom Taxonomy:

1) Remembering
2) Understanding
3) Applying
4) Analyzing
5) Evaluating
6) Creating

COLs	1	2	3	4	5	6
CLO1	True	True	True			
CLO2	True	True	True			
CLO3	True	True	True			
CLO4	True	True	True			
CLO5	True	True	True			
CLO6	True	True	True			
CLO7	True	True	True			

5. Course Teaching Methods

1	Lecture
2	Problem solving Learning
3	Interactive Learning
4	Practical sessions

Course Policy:

6. Grading Scheme

Mid Term		20%
Assignments		10%
Quiz		10%
Final Term		60%

7. Weekly Course Breakdown:

Class (50 mins)	Week #	Topic	Learning outcome	Instructor Activity	Student Activity	Assessment
1	1	- Open source vs non-open source software - Philosophy of open source software - Open source software usage - Introduction to RHEL7 desktop environment	-At the end of the class the students will be able to relate the course with other pre-requisites. -The students will be able to familiarize with course contents. -The students will be able to explain the importance open source server OS and other application software	- AO: What the students think about open source software? - How it relates to other non-open source software subjects? - PPT presentation lecture - Close: what will the student be able to do after successfully completion of the course?	- Discussion - listening the lecture	-Q&A - feedback
2		- RHEL7 installed - RHEL7 terminals - Bash shell - Executing commands using bash shell	At the end of the class the Students will be able to: - install any version of RHEL and/or Centos - work with basic bash	- AO: how to install RHEL7? - Bash shell and basic shell commands - ID: Lecture	-Brain storming -Listening to the lecture -Note taking -practical session	-feedback -Q&A - Reflection. Summative: 1Q for final exam.

Course Policy:

		- Basic commands - RHEL7 file system hierarchy	shell commands - Know the Linux file system hierarchy	presentation - Close: summarizing the lecture	with students - one end question	
1	2	**Managing files** - Creating directories and files - Copying directories and files - Moving directories and files - Renaming directories and files - Deleting directories and files	-At the end of the class the students will be able with Linux files. - the students will be able to create, copy, move, delete files using bash shell commands	- AO: how can the students deal with files? - Lecture presentation and practical session at class - close: summarizing the lecture	-understand and implement -Discussion - listening the lecture - practical session	- feedback - reflection - Assignment
2		- COMPUTER LAB (STUDENTS PRACTICE) - Visit to computer lab	- Student will implement the commands of previous lectures practically in computer lab	- AO-Asking the students about the previous topic. - Assisting students with troubleshooting issues	- - understanding and implementation - -practical session	-reflection -peer rating -Assignment -report of computer lab practice
1	3	**Getting Help in Linux & working with files using vim and gedit editors:** - Getting help using man command - Getting help using –help command - Getting help using pinfo command	- At the end of the class the students will be able to: - Learn how to get help from the Linux bash shell - User various Linux commands for local and online help	AO: how does technical support and help assist us? ID-PPT presentation lecture Close: list what you have learn in this class?	- think pair share - Discussion - listening the lecture - understanding the outcome of the commands - Taking short notes	- Feedback - Reflection - Assignment Summative: -Final exam question.
2		- SoS Report - Viewing & creating files with cat command - Editing files with vim editor	- At the end of the class the students will be able to explain: - How the vim editor works using CLI - Creating and editing files	- AO: which Linux editor is effective and why? - ID-PPT presentation lecture	- think pair share - Discussion - listening the lecture - Learn how to	- Feedback - Reflection - Assignment - - Summative:

Course Policy:

		- Editing files with gedit editor - COMPUTER LAB (STUDENTS PRACTICE)	with vim - Working with gedit, a GUI Linux editor	- Close: list what you have learn in this class? - Solving the issues of students in computer lab	use vim and gedit editors	- -Lab report - -Final exam question.
1	4	- local users and groups and Managing files & folder permission - Local users and groups in Linux - Creating users and groups - Deleting users and groups - Adding users into groups	At the end of the class the students will be able to: - To manage local users and groups	- AO: what are the files which stores users and groups' info? How to deal with users - ID-PPT presentation lecture - Practical session in class - Close: summary	- think pair share - Discussion - listening the lecture - understanding and implementation of the commands	- Feedback - Reflection - Assignment - Summative: - -Final exam question. -
2		- User ID and Group ID in Linux - Resetting users password - Password policies - COMPUTER LAB (STUDENTS PRACTICE)	- At the end of this course the Students will be able to: - Understand the GID and UID - Understand and deploy the users' password policies.	- AO: what is the significance of password policies? How do they increase the security? - ID-PPT presentation lecture - Practical session in class - Close: list what you have learn in this class? - Assisting students in computer lab	- think pair share - Discussion - listening the lecture - Lab session of students: practice all previous lessons.	- Feedback - Reflection - Assignment - Summative: - -Lab report - -Final exam question.
1	**5**	**Managing files & folder permission** - Default file and directory permission - Setting file and directory	- Understanding how to modify the file and directory permission policies	- AO: what is the significance of file and directory permissions? How do they increase the security?	- think pair share - Discussion - listening the lecture	- Feedback - Reflection - Assignment - Summative: - Final exam questions

Course Policy:

		permissions - Modifying files and directory permission - Setting umask value		- ID-PPT presentation lecture - Practical session in class - Close: list what you have learn in this class?		
2		COMPUTER LAB (STUDENTS PRACTICE)	- Implementation of the previous lesson practically in computer lab by students	- AO: lab agenda and objectives - ID: assisting students in computer lab - Close: summarizing the lecture	- Hands on practice - Implementation of the previous lesson - Lab report	- Feedback - Reflection - Assignment - Summative: - -Lab report
1	**6**	**Displaying Linux Process:** - Displaying Linux process using different commands - Working with Linux processes & Killing Linux Processes	- Working with Linux processes. - Displaying and killing Linux processes -	- AO: How to display and kill process in Linux? - Lecture presentation - Practical session in class - close: summarizing the lecture	- think pair share - Discussion - listening the lecture - taking notes	- Feedback - Reflection - Assignment - Summative: - Final exam questions - Summative: HW
2		**-** COMPUTER LAB (STUDENTS PRACTICE)	- Implementation of the previous lesson practically in computer lab by students - Practicing Linux processes	- AO: lab agenda and objectives - ID: assisting students in computer lab - Close: summarizing the lecture	- Hands on practice - Implementation of the previous lesson - Lab report	- Feedback - Reflection - Assignment - Summative: - -Lab report
1	**7**	**Services & Daemons plus logs**: - Viewing Linux services - Starting, stopping, restarting, disabling, enabling services	- Working with Linux logs and handling Linux Services	- Asking opening class 1-5 question by random selection - Lecture presentation - Practical session in class - close: summarizing	- Brain storming - Listening to the lecture - note taking - Performing the assignment	- Feedback - Reflection - Assignment - Summative: - Final exam questions - Summative: HW

Course Policy:

		- Viewing Linux logs using different commands		the lecture		
2		- Setting up yum server - Installing, uninstalling and updating software using yum - COMPUTER LAB (STUDENTS PRACTICE)	- Configuration of YUM server - Installation and uninstallation of packages	- Asking opening class 1-5 question by random selection - Lecture presentation - Practical session in class - close: summarizing the lecture	- Brain storming - Listening to the lecture - note taking - Performing the assignment	- Feedback - Reflection - Assignment - Summative: - -Lab report
1	**8**	**Managing RHEL7 Networking & SSH configuration** - Viewing the current IP add of the system - Setting dynamic IP address - Setting static IP, DNS server IP and default gateway - Editing the IP configuration file	- Viewing IP configuration - Static and dynamic IP configuration - Modifying the source file of IP configuration	- Asking opening class 1-5 question by random selection - Lecture presentation - Practical session in class - close: summarizing the lecture	- Brain storming - Listening to the lecture - note taking - Performing the assignment	- feedback - Assignment - Reflection. - Formative: 1-5 question random selection - HW
2		- Different usage of the nmcli command - Setting hostname and viewing hostname configuration file - Configuring SSH - Access remote system using SSH	- Creating, deleting, modifying and viewing connections using nmcli - SSH configuration - Setting up hostnames	- Asking opening class 1-5 question by random selection - Lecture presentation - Practical session in class - close: summarizing the lecture	- Brain storming - Listening to the lecture - Note taking - Performing the assignment	- feedback - Assignment - Reflection. - Formative: 1-5 question random selection - HW
1	**9**	**Copying files between systems & controlling access to the files**	- Copying files between systems - ACL implementation	- Asking opening class 1-5 question by random selection	- Brain storming - Listening to the lecture	- feedback - Assignment - Reflection. - Formative: 1-5

Course Policy:

		- Copying files between systems using scp - Access Control List (ACL) - Securing files with ACL - Interpreting ACLs		- Lecture presentation - Practical session in class - close: summarizing the lecture	- note taking - Performing the assignment	question random selection - HW
2		**-** COMPUTER LAB (STUDENTS PRACTICE)	- Implementation of the previous lesson practically in computer lab by students - Practicing ACL and copying files between systems	- AO: lab agenda and objectives - ID: assisting students in computer lab - Close: summarizing the lecture	- Hands on practice - Implementation of the previous lesson - Lab report	- Feedback - Reflection - Assignment - Summative: - -Lab report
1	**1 0**	**Managing SELinux security SElinux** - Changing SELinux modes - Changing SELinux Booleans -	- Understanding and working with SELinux -	- Asking opening class 1-5 question by random selection - Lecture presentation - Practical session in class - close: summarizing the lecture	- Brain storming - Listening to the lecture - note taking - Performing the assignment	- feedback - Assignment - Reflection. - Formative: 1-5 question random selection - Summative: 1Q for final exam
2		**-** COMPUTER LAB (STUDENTS PRACTICE)	- Implementation of the previous lesson practically in computer lab by students - Practicing SELinux	- AO: lab agenda and objectives - ID: assisting students in computer lab -	- Hands on practice - Implementation of the previous lesson - Lab report	- Feedback - Reflection - Assignment - Summative: - -Lab report

Course Policy:

1	**11**	**Managing & sharing files with NFS** - NFS installation - NFS configuration - Managing files with NFS	- NFS Server installation and Configuration - NFS Client configuration	- Asking opening class 1-5 question by random selection - -Lecture presentation - close: summarizing the lecture	- Brain storming - Listening to the lecture - note taking - Performing the assignment	- feedback - Assignment - - Reflection. - - Formative: HW
2		**-** COMPUTER LAB (STUDENTS PRACTICE)	- Implementation of the previous lesson practically in computer lab by students - Practicing NFS Server	- AO: lab agenda and objectives - ID: assisting students in computer lab	- Hands on practice - Implementation of the previous lesson - Lab report	- Feedback - Reflection - Assignment - Summative: - -Lab report
1	**12**	**Managing Firewall & Network Port Security** - Checking Firewall status - Firewall zones - Allowing or blocking services in firewall - Allowing or blocking port numbers in firewall	- Understanding firewall and blocking or allowing certain services or ports -	- Asking opening class 1-5 question by random selection - Lecture presentation - Practical session in class - close: summarizing the lecture	- Brain storming - Listening to the lecture - note taking - Performing the assignment	- feedback - Assignment - Reflection. - Formative: 1-5 question random selection - Summative: 1Q for midterm & final exam
2		- Port-forward configuration - Creating rich rules in firewall - Assigning different NICs into different zones - Working with firewall service - COMPUTER LAB (STUDENTS PRACTICE)	- Understanding and implementation of port forward and rich rules in Linux firewall - Working with panic mode	- Asking opening class 1-5 question by random selection - Lecture presentation - Practical session in class - close: summarizing the lecture	- Brain storming - Listening to the lecture - note taking - Performing the assignment - Practical session in computer lab	- feedback - Assignment - Reflection. - Formative: 1-5 question random selection - Summative: Lab report

Course Policy:

1	**13**	- Installation and management of DNS server - What's DNS sever - DNS server installation - Editing DNS zone files - Adding DNS records into DNS zone files - DNS uninstallation	- Understanding the concept of DSN and how it works - Installation and Configuration of DNS server - Working with DNS configuration files	- Asking opening class 1-5 question by random selection - Lecture presentation - Practical session in class - close: summarizing the lecture	- Brain storming - Listening to the lecture - note taking - Performing the assignment - Practical session in computer lab	- feedback - Assignment - Reflection. - Formative: 1-5 question random selection - Summative: HW
2		**-** COMPUTER LAB (STUDENTS PRACTICE)	- Implementation of the previous lesson practically in computer lab by students - Practicing DNS Server	- AO: lab agenda and objectives - ID: assisting students in computer lab - Assisting students in Lab	- Hands on practice - Implementation of the previous lesson - Lab report	- Feedback - Reflection - Assignment - Summative: - -Lab report
1	**14**	**Apache Web Server:** - what is apache web server - Apache HTTPD - Installation - Uninstallation - Working with DHCP configuration file	- Understanding the concept and requirements of web server - Installation of Apache web server - Configuration of web server	- Asking opening class 1-5 question by random selection - Lecture presentation - Practical session in class - close: summarizing the lecture	- Brain storming - Listening to the lecture - note taking - Performing the assignment	- feedback - Assignment - Reflection. - Formative: 1-5 question random selection - Summative: 1Q for final exam
2		**-** COMPUTER LAB (STUDENTS PRACTICE)	- Implementation of the previous lesson practically in computer lab by students - Practicing Apache Web server	- AO: lab agenda and objectives - ID: assisting students in computer lab - Assisting students in Lab	- Hands on practice - Implementation of the previous lesson - Lab report	- Feedback - Reflection - Assignment - Summative: - -Lab report
1	**15**	**Mail server configuration:** - what's mail server - mail server	- Understanding the concept of mail server - Installation of postfix	- Asking opening class 1-5 question by random selection	- Brain storming - Listening to the lecture	- Assignment - Reflection. - Formative: 1-5 question

Course Policy:

		installation - mail server uninstallation -	- Configuration and testing of mail server	- Lecture presentation - Practical session in class - close: summarizing the lecture	- note taking - Performing the assignment	random selection - Summative: 1Q for final exam
2		- COMPUTER LAB (STUDENTS PRACTICE)	- Implementation of the previous lesson practically in computer lab by students - Practicing mail server	- AO: lab agenda and objectives - ID: assisting students in computer lab - Assisting students in Lab	- Hands on practice - Implementation of the previous lesson - Lab report	- Feedback - Reflection - Assignment - Summative: - -Lab report
1	**16**	**DHCP Server:** - DHCP - DHCP server installation - DHCP Server Configuration - DHCP Server uninstallation	- Understanding the concept of DHCP server and how it works - Installation of DHCP packages - Configuration and testing of DHCP server	- Asking opening class 1-5 question by random selection - Lecture presentation - Practical session in class - close: summarizing the lecture	- Brain storming - Listening to the lecture - note taking - Performing the assignment	- Assignment - Reflection. - Formative: 1-5 question random selection - Summative: 1Q for final exam
2		- COMPUTER LAB (STUDENTS PRACTICE)	- Implementation of the previous lesson practically in computer lab by students - Practicing DHCP server	- AO: lab agenda and objectives - ID: assisting students in computer lab - Assisting students in Lab	- Hands on practice - Implementation of the previous lesson - Lab report	- Feedback - Reflection - Assignment - Summative: - -Lab report